

Stone Fruits—Pesticide Resistance

Oriental Fruit Moth in Peaches

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We have been monitoring oriental fruit moth for azinphosmethyl resistance for the past three seasons. Tests were conducted on adult male moths using the toxicant-laced adhesive technique developed by Tom Miller at UCR with a diagnostic dose of 100 micrograms azinphosmethyl per gram of adhesive. All tests, except the 1991 Butte County bioassays, were conducted against the first summer (May) generation, between 300 and 500 degree days after the beginning of the flight. The 1991 Butte County bioassays were conducted on the second summer generation, in late June.

Insecticide-laced trap bottoms and tops were assembled and placed in the field just prior to dusk. Traps were collected early the following morning, placed in ice chests with enough wet paper towels in the bottom to keep humidity above 90%. Traps were incubated at room temperature (approx. 73°F) and moths checked 24 hours later by probing with a pencil to detect any movement. Data were transformed using Abbott's formula and percent mortality calculated.

Data from 1990 indicate OFM resistance was limited to the Lomo area north of Yuba City in Sutter County and across the Feather River in Yuba County. Five orchards in the area were surveyed with mortality ranging from 30 to 50%. This compares to 98% mortality in an assumed susceptible strain in the San Joaquin Valley (Table 1). Three orchards in Butte County that had reported control failures with azinphosmethyl were tested in 1991 and there are indications all three orchards were resistant.

Sixteen peach and nectarine orchards throughout California were bioassayed in 1992 in cooperation with county-based farm advisors. All three Butte County orchards appeared to be resistant or are becoming resistant but two Sutter County orchards located south of Yuba City still seem to be susceptible. Three orchards in Stanislaus County were bioassayed with two of the three orchards indicating resistant populations. This is the first time resistance has been detected in the San Joaquin Valley. All orchards tested south of Modesto were still susceptible.

Table 1. Survey of OFM resistance in California using azinphosmethyl mixed with adhesive in pheromone traps.¹

County	Grower	1990 % mortality	1991 % mortality	1992 % mortality
Butte	Carlin (Peterson Rd.)			59
	Badashi (Little Rd.)			58
	Singh (Ord Ranch)			31
	Palma (Larkin Rd.)	62		
	MC		43	
	Peek		35	
	Stowe		49	
Sutter	Singh (Lincoln Rd.)			86
	Johl (Reed Rd.)			73
	Johl (Eager Rd.)	34		
	Poole (Eager Rd.)	57		
	Levee (Lomo)	41		
	De-Valentine (Rio Oso)	73		
	Vertrees (Rio Oso)	81		
Yuba	Tierra (Dist. 10)	31		
San Joaquin	Zeider (Lockford)	94		
	Linden (Baker/Duman Rd.)	77		
Stanislaus	"L"			56
	"S"			46
	"D"			89
	Britton (Salida)—Almonds	94		
Merced	Fiorini (Livingston)	54		79
	S&J (Chowchilla)—Almonds	79		
Fresno	Chandler (Selma)	92		93
	KAC (Parlier)	89		71
	Ballantine (Kingsburg)	98		
Kings	Palm Ave. (Kingsburg)			79
	Meyer			87
	9 th Ave. (Hanford)			93
Kern	Sandrini			63
	Vallos Rd.			83

¹Diagnostic dose 100 micrograms/gram adhesive.
Mortality corrected using Abbott's formula.